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ABSTRACT

This booklet provides a framework within which information skills may be taught. Four broad categories of information skills--identifying and locating information sources, information intake, organizing information, and communicating information--are described. The development of an information skills policy which includes a sequential list of specific skills, allocation of teaching of skills to particular staff, and guidelines on assignments is discussed. Four common approaches to the teaching of information skills (the formal-unrelated, formal-related, functional-incidental, and integrated approaches) are summarized. A guide for teaching information skills which includes nine questions to be considered in completing an information search is presented and related to the four categories of information skills. Each of the nine steps is then explained in more depth. Detailed strategies for teaching the following particular skills are suggested: (1) extracting information from library materials; (2) writing an assignment; (3) report writing using data charts; and (4) using print materials in a school library. Four references are listed, and a chart of a six-stage sequence for the development of the following 16 specific information skills is appended: following instructions, formulating questions, locating information, extracting information from visual sources, extracting information from aural sources, using personal experiences, sequencing, classifying, key words, main idea, detailing/verifying, skimming/scanning, summarizing, considering alternatives, drawing conclusions, and predicting outcomes. (MES)

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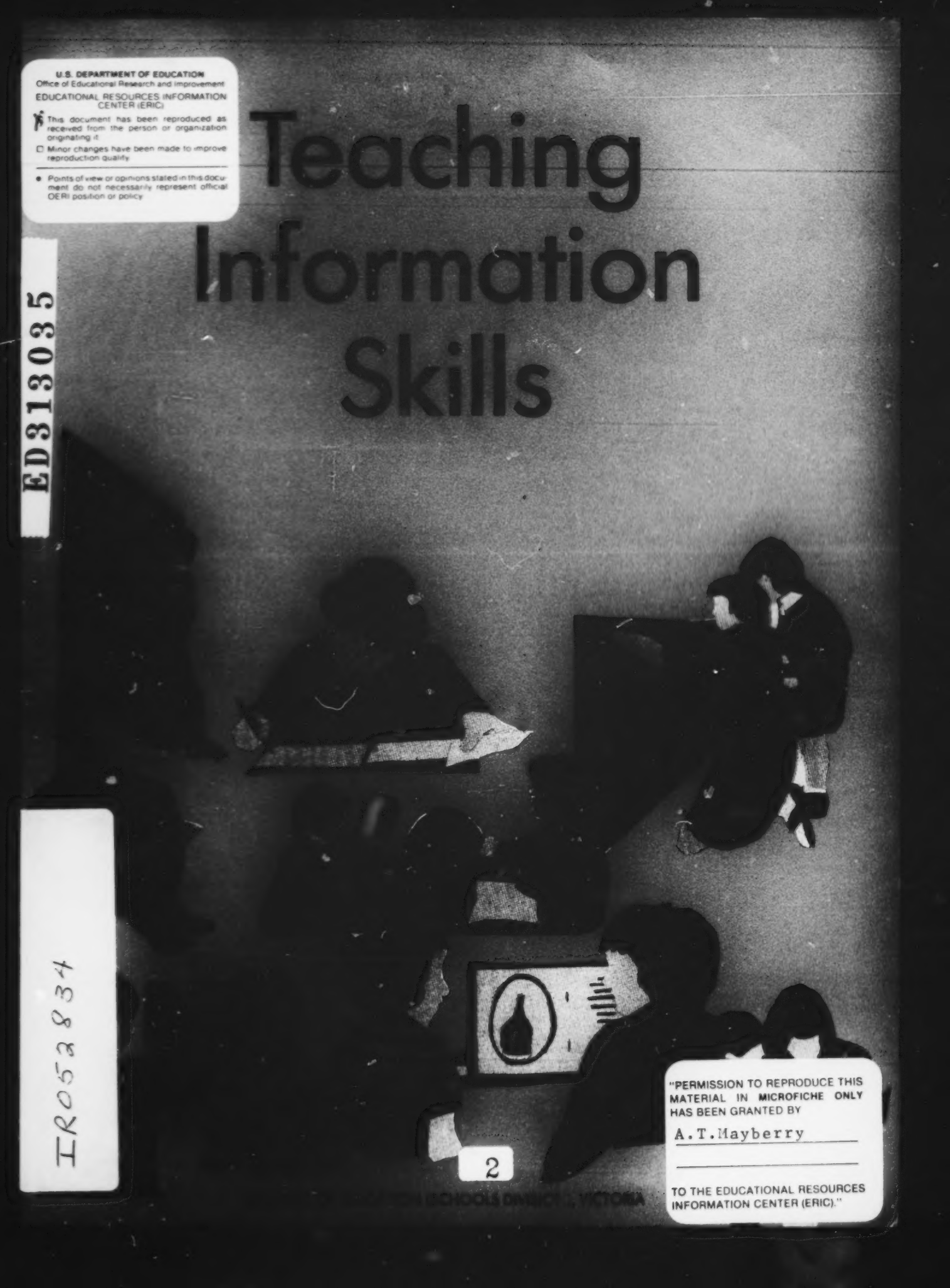
Teaching Information Skills



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Teaching Information Skills

Curriculum Branch, Ministry of Education (Schools Division), Victoria, 1987

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INTRODUCTION

This booklet outlines a guide within which the skills required to locate, extract and synthesise information from different sources may be taught. The term "information skills" is used in this booklet as a comprehensive term which encompasses "study skills", "library/locational skills" and "research skills".

The Ministry of Education's policy on curriculum development emphasises that students need opportunities to use different methods of inquiry to gather and analyse information, and to "use a variety of media for understanding and communicating ideas and information". (*Curriculum development and planning in Victoria; Ministerial Paper No. 6*, 1984, p. 15.) The effective teaching of information skills is considered important both to provide access to information and to enable students to use information for purposeful inquiry, informed decision making and learning throughout life.

In the early years of schooling, most information gathering and processing will be oral, with most of the processing activities undertaken as group work. However, as students move through school, the types of information materials students encounter will become increasingly diverse and complex as will the information processing talks. Similarly, the resulting judgements and opinions will increase in complexity and sophistication.

The authors of this Booklet wish to acknowledge that strategies from *Developing children's research and note-taking skills: a guide for teachers and teacher-librarians in primary schools* (Draft copy, Education Department of Victoria, 1981) are incorporated into this publication.

This booklet is designed for teachers, although some of the contents can be used directly by students.

WHAT ARE INFORMATION SKILLS?

Information skills are skills that are needed every day—in making decisions, in finding solutions to problems, and in any other activity that involves identifying, finding and using different kinds of information. The techniques used to handle information in an educational context are the same as those needed in everyday life.

Information skills can be grouped into four broad categories:

- Skills for identifying and locating information sources are those skills that are concerned with understanding the need for information, with identifying the range of available sources of information and with knowing how to gain access to the various sources.
- Skills for information intake are those skills that are concerned with receiving information.
- Skills for organising information are those skills that are concerned with the interaction between the individual and the information. Simply learning ideas and facts is not enough. The information must be reflected upon and some organisation imposed upon it. Such skills as analysing, synthesising, drawing conclusions and making comparisons will be used.
- Skills for communicating information are expressive skills which allow an individual to apply information gained and to demonstrate its usefulness through oral, written, pictorial, dramatised and other presentations.

There are particular skills which relate to these broad categories:

- **Skills for identifying and locating information sources**
- **Skills for information intake**

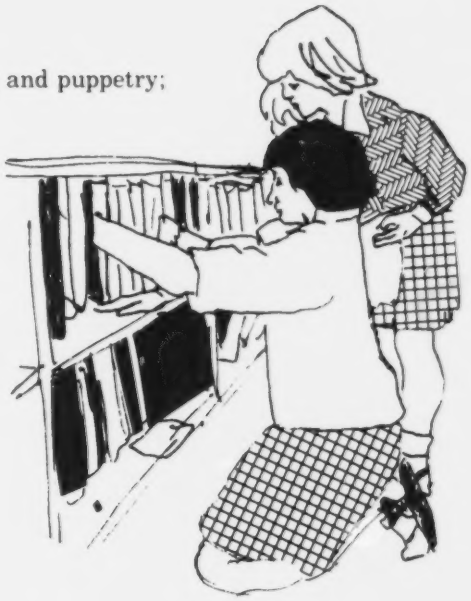
  Asking questions;
  listening and interacting;
  following written and verbal instructions;
  using appropriate language e.g. library terminology, computer language;
  handling books, newspapers, etc.;
  using telephones;
  skimming and scanning written material;
  locating the main idea;
  reading for inference;
  making notes;
  extracting information from signs, books, written sources e.g. library catalogues;
  extracting information from audio and audio-visual sources e.g. radio, television, slides;
  extracting information from the environment e.g. observing people, objects, situations;
  writing letters e.g. to an information source;
  using a keyboard, tape recorder, microfiche reader, etc.;
  manipulating globes, maps, etc.

- **Skills for organising information**

  Classifying, sequencing, naming groups;
  distinguishing between fact and fiction, fact and opinion;
  recognising relevance to an established process;
  distinguishing bias and prejudice;
  making generalisations from evidence;
  considering alternatives, making comparisons, making choices, analysing data;
  predicting outcomes, drawing conclusions;
  synthesising information from diverse sources;
  relating cause and effect.

- **Skills for communicating information**

  Giving a description;
  telling a story;
  making a report;
  discussing;
  answering questions;
  making a tape-recording;
  dramatic presentations such as role-playing and puppetry;
  debating;
  making notes and summaries;
  writing reports;
  writing descriptions;
  writing letters;
  making a book;
  keeping a diary;
  keeping records;
  drawing pictures and diagrams;
  cutting and pasting;
  presenting a collection or illustrated list;
  making charts, models and dioramas;
  making graphs and tables;
  making a time-line;
  making a map;
  making an illustrated book;
  photographing;
  video-taping;
  film-making.



For a categorisation and six-stage sequence of skills, see the appendix (page 27).

DEVELOPING AN INFORMATION SKILLS POLICY

"We believe that there is no one school subject or activity in which information skills can be adequately taught and practised". (*Information skills in the secondary curriculum: the recommendation of a working group sponsored by the British Library and Schools Council*, 1981, p.26.)

The ability to locate, process and communicate information is necessary for students in all subjects. It is therefore every teacher's responsibility to teach these skills.

In developing their curriculum and teaching strategies, schools should adopt a coordinated approach, with a whole-school policy for the teaching of information skills which involves:

- a sequential list of the specific skills (for an example see the appendix);
- allocating the teaching of these skills to particular staff, taking into account their subject expertise;
- guidelines on the range, nature and type of assignments to reinforce and practice these skills.

The responsibility for initiating, implementing, monitoring and evaluating this policy would vary among schools. Depending upon the type and organisation of the school, responsibility may rest with a curriculum committee coordinator, school principal or school council.

In implementing the policy, both cooperation and coordination are essential. Those involved in teaching information skills using the guide must be clear about their role in the process, as, for example: Year 7 may have a class activity based on using various information sources. A teacher introduces the aim and topic of the activity. The teacher-librarian teaches the students how to identify and locate information sources, for example, in reference books and through indexes and catalogues. The teacher, with the assistance of the teacher-librarian, teaches a variety of skills for information intake, such as skimming, scanning and note-taking.

CURRENT APPROACHES TO TEACHING INFORMATION SKILLS

Currently, the most common approaches to the teaching of information skills are:

- The formal-unrelated approach, where skills are taught in isolation, for example, in "library lessons" or contrived library activities. This approach may be useful where a necessary skill is seen to be lacking. Skills taught through this approach tend not to be transferred to other situations.
- The formal-related approach, where skills are taught when the need for those skills in curriculum areas is identified. For example, the teacher-librarian may give a series of lessons on skills appropriate to current classroom needs.
- The functional-incidental approach, where skills are taught when particular needs emerge. The weakness of this approach, when used alone, is that it is unstructured and, as some needs are unexpressed or unnoticed, may result in an uneven coverage of necessary skills.
- The integrated approach, where the skills are built into existing or planned curriculum areas. The teacher and the teacher-librarian plan the curriculum cooperatively to ensure that information skills are an integral part of curriculum planning, implementation and evaluation. This approach enables students to learn information skills as an integral part of their schooling.

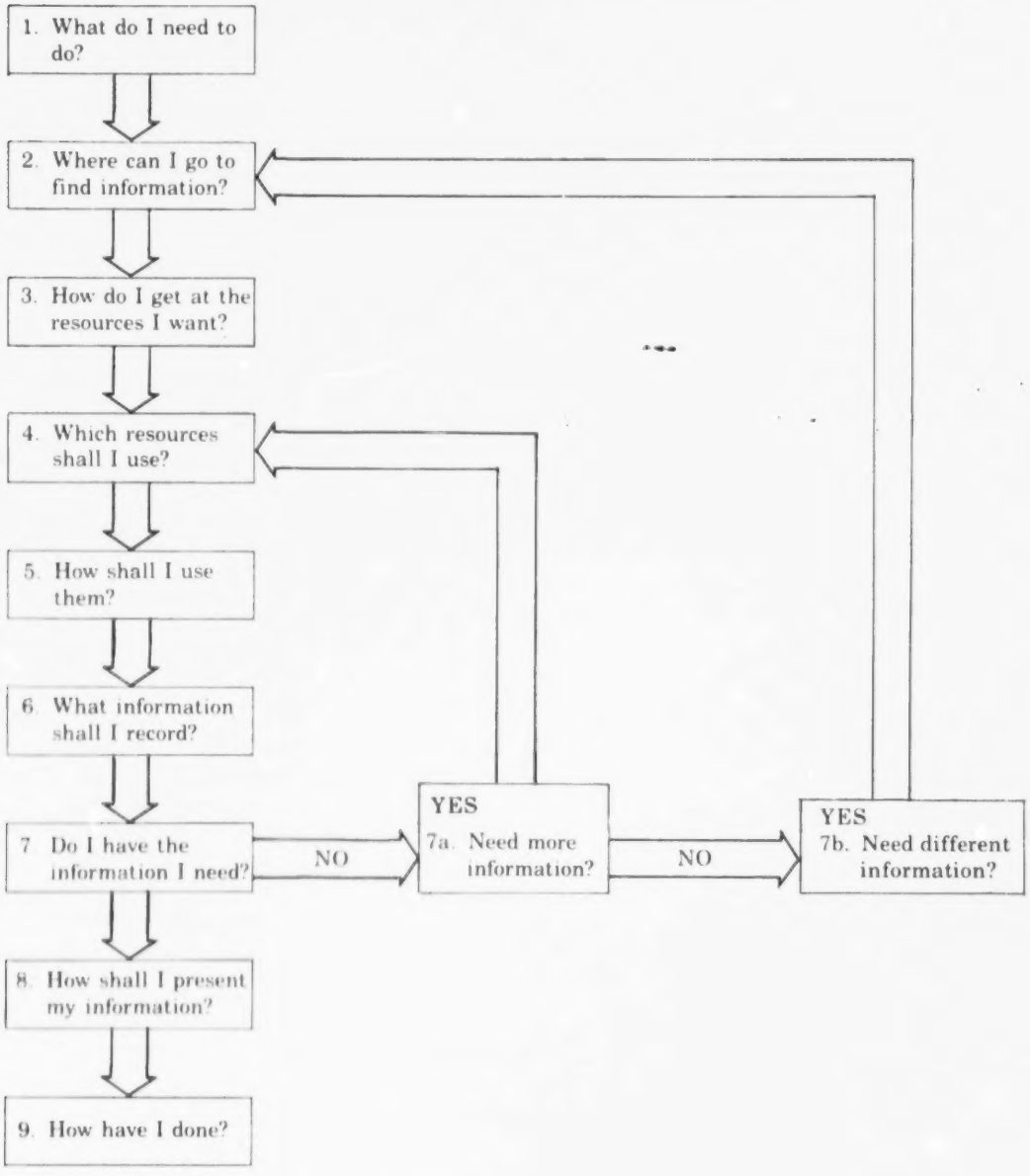
LINKING INFORMATION SKILLS TO A PROCESS

This booklet presents a guide to teaching information skills which, used in conjunction with the integrated approach, will be more effective because the combination allows:

- skills to be taught functionally, in the context of curriculum content, rather than as a separate exercise;
- the learner to understand the meaning and purpose of the skills, and have motivation for developing them;
- individual differences in student needs and abilities to be catered for;
- skill instruction to be presented at increasing levels of difficulty moving from the simple to the more complex;
- opportunities for practice and application of skills, with immediate evaluation;
- students to be helped to generalise the skills, by applying them in a variety of situations;
- students to be moved towards ever-increasing independence in the use of information skills.

The guide presented on the following page outlines nine questions which need to be considered when completing an information search.

THE GUIDE


1. What do I need to do?
2. Where can I go to find information?
3. How do I get at the resources I want?
4. Which resources shall I use?
5. How shall I use them?
6. What information shall I record?
7. Do I have the information I need?
NO
YES
7a. Need more information?
NO
YES
7b. Need different information?
8. How shall I present my information?
9. How have I done?

In order to deal successfully with each of these questions, students will need to have a wide range of skills associated with locating and using information and defining their information needs.

The four main categories of information skills can be related to the framework in the following way:

1. What do I need to do?
2. Where can I go to find information?
3. How do I get at the resources I wish to use?

- **Skills for identifying and locating information sources**
- **Skills for information intake**

Asking questions;
listening and interacting;
following written and verbal instructions;
using appropriate language e.g. library terminology, computer language;
handling books, and newspapers, etc.;
using telephones;
skimming and scanning written material;
locating the main idea;
reading for inference;
making notes;
extracting information from signs, books, written sources e.g. library catalogues;
extracting information from audio and audio-visual source e.g. radio, television, slides;
extracting information from the environment e.g. observing people, objects, situations;
writing letters e.g. to an information source;
using a keyboard, tape recorder, microfiche reader, etc.;
manipulating globes, maps, etc.

4. Which resources shall I use?

5. How shall I use them?
6. What information shall I record?
7. Do I have the information I need?

- **Skills for organising information**

Classifying, sequencing, naming groups;
distinguishing between fact and fiction, fact and opinion;
recognising relevance to an established process;
distinguishing bias and prejudice;
making generalisations from evidence;
considering alternatives, making comparisons, making choices, analysing data;
predicting outcomes, drawing conclusions;
synthesising information from diverse sources;
relating cause and effect.

8. How shall I present my information?
9. How have I done?

- **Skills for communicating information**

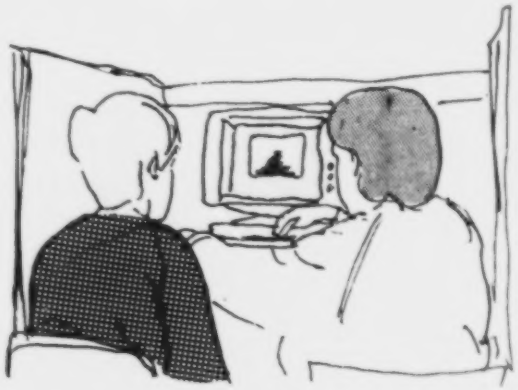
Giving a description;
telling a story;
making a report;
discussing;
answering questions;
making a tape-recording;
dramatic presentations such as role-playing and puppetry;
debating;
making notes and summaries;
writing reports;
writing descriptions;
writing letters;
making a book;
keeping a diary;
keeping records;
drawing pictures and diagrams;
cutting and pasting;
presenting a collection or illustrated list;
making charts, models and dioramas;
making graphs and tables;
making a time-line;
making a map;
making an illustrated book;
photographing;
video-taping;
film-making.

These nine questions provide a comprehensive structure that can:

- demonstrate the value of information-based decision making;
- demonstrate the place of specific skills in activities that require finding and using a range of information sources;
- assist teachers in checking that skills are comprehensively taught, or that particular skills are not overlooked;
- assist teachers to sequence learning activities for skill development;
- assist teachers to assess students in terms of their skill development;
- stimulate ideas for introducing and practising skills within curriculum content areas;
- stimulate the use of a wide range of information sources;
- provide opportunities for different approaches to problem-solving;
- allow different information skills to be used at appropriate times.

The guide is presented not as a blue-print but as a guide for planning, carrying out and reviewing activities involving finding and using information. It highlights the belief that students need to see information skills as part of a total process.

There is no one way to apply the guide as different information searches require different information resources and skills. A beginning might be for teachers to look at the kinds of assignments they set in terms of the guide and ask: "What skills do I assume the students have in order to carry out my assignment effectively?" or "What skills am I teaching with this assignment?"



THE GUIDE IN DETAIL

In this section, each step in the information guide has been expanded. This expansion comprises an explanation of each step and some questions focusing upon aspects of each step. Initially, the teacher may need to provide a series of specific questions or headings to direct student inquiry. As students develop questioning skills, and this should be consciously encouraged by the teacher through activities such as group discussion and "brainstorming", the inquiry should become more self-directed.

1. What do I need to do?

No activity, assignment or information search should begin until the student clearly understands the aims and nature of the activity.

What is the purpose/aim?

For whom is it intended?
What do I hope to learn?

What is the topic? or problem? or issue?

Do I need to choose a topic?
Do I need to focus on specific aspects of the topic?

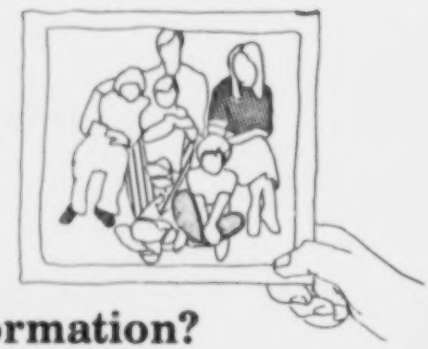
Why do I need the information?

Is it to help solve a problem?
Is it to help make a decision?
Is it to study an issue?
Is it to find out about a matter of interest to me?

What do I already know about this topic?

(It is important for the students to share their own experiences and to value their own information on a topic.)

What must I find out?



EXAMPLE: "My family" assignment.

1. What am I trying to find out about my family? What do I know about this already?
   What else must I find out?

2. Where can I go to find information?

Taking into account both local circumstances and constraints such as the deadline set by the teacher, the student should determine what sources of information are available for the activity or topic. Initially, the teacher will need to direct students to a limited number of sources.

What sources exist?

Who would know about this topic?
What organisations (such as libraries, information centres, government departments) would have information about this topic?
What published material, print and non-print, on this topic do I have access to?
Are there areas in the local community which can provide information?
Are there computer-based information systems which would contain the information I need?

How much time do I have?

Where should I go first?

Do I need to create my own information?

By observation?
By survey?
By experiment?
By field work?

EXAMPLE: "My family" assignment.

2. Which family members might have some of the information I need?
   Parents/guardians?
   Grandparents?
   Other relatives?
   Is there a written family history?

3. How do I get at the resources I want?

Access is the key to a successful information search. Many information sources are tightly organised: when using information sources such as books, libraries, or computer data-bases, an understanding of how the information is structured in, for example, library catalogues or subject/periodical indexes, is crucial, if the source is to be used effectively and independently. People, on the other hand, can be fairly flexible information sources: if they have the information, they can mentally "shuffle" what they know—we don't need to know how the information is structured in the other person's brain in order to get the information we want. But it is important that we frame the questions correctly. Techniques, such as beginning with general questions and proceeding to more specific questions, can be introduced to students through demonstration and group discussion.

Will I need help, or can I find the answers by myself?

Who or what should I approach? and how?

How should I frame my question(s)?

How accessible are the information sources?

Do I need to have access to a computer terminal?
Will the organisation provide information to an outsider?

What procedures should I follow?

In, for example, library catalogues or subject/periodical indexes.

EXAMPLE: "My family" assignment.

3. When will I see my grandparents?
   How should I contact my aunt in Sydney?

4. Which resources shall I use?

The resources located may consist of people with specialist knowledge or experience, the environment, data banks, visual resources (for example, photographs, maps and films), reference books, textbooks, periodicals and newspapers, sound recordings, models, specimens, etc.

Students need to be gradually taught skills of:
examining contents and packaging (e.g. labels, blurb, title page, index) to determine currency and general suitability;
examining any information given about the author, editor, to judge expertise and possible bias;
sampling contents for indications of intent, terminology, level, illustrations, amount of detail and relevance to task.

Examining, selecting and rejecting individual resources should be carried out in light of the initial question, "What do I need to know about this issue?" The resources used should be limited initially, with students progressively introduced to an increasing range.

What resources have information I need?

How should I choose?

Which resources are most suitable for my topic?
Is the scope too wide? too narrow?
Is the material suitable to my purpose?
What evidence is there of the expertise of the author? the publisher?
Is it reliable?
Is the information current?
Is it accurate or perhaps biased?
Is it of an appropriate level—too simple? too complex?

What other sources could they lead me to?

(For example, other references, other people or organisations.)

EXAMPLE: "My family" assignment.

4. Is the written family history suitable for my task?
   Does the local histories have any detailed information about my family?

5. How shall I use these resources?

Having located relevant resources, students are faced with the task of extracting useful information. Students need to develop strategies for extracting information from a variety of resources. For example, if the resource is a book, students need to learn how to use the contents list, index, sub-headings, chapter summaries and glossary.

Similarly, depending on the resource being examined, students will need such strategies as scanning for facts, skimming for information and meaning, studying pictorial and other visual data, analysing and interpreting content, questioning content, interpreting visual narrative, analysing inter-relationships of aural and visual elements and preparing a survey.

Where do I look to see if the resource might have the information I need?

How do I find out if any of this information is useful to me?

EXAMPLE: "My family" assignment.

5. What questions will I ask my grandmother?

6. What information shall I record?

Deciding what to record involves focusing again on the aim of the task, and may involve a reappraisal of the task—the original problem or task may change in the light of information gathered.

Deciding how to record is also highly important and requires organisation of the information gathered. There are many ways of recording information. For example, note-taking, summarising, taking photographs, tabulating, making diagrams, quoting and recording on video. Students should be encouraged to experiment with different techniques so that they can develop their own styles.

The physical organisation of information which has been gathered—possibly being organised in labelled folders, files or on cards also needs attention.

What is important for my task?

What main ideas do I want to record from this material?
What details are relevant to my topic?

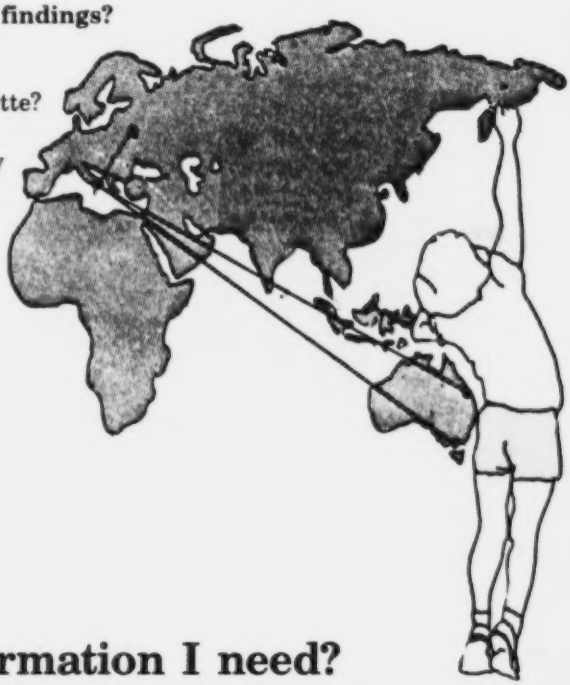
How shall I record the selected information?

Is there any information I could record in a better way, using a sketch or map or graph?

How should I label and arrange my findings?

EXAMPLE' "My family' assignment.

6. Will I tape the conversation on cassette?
   Will I take a photograph?
   Would a map of the area(s) where my grandparents were born be useful?



7. Do I have the information I need?

At this stage, the information gathered has to be analysed, synthesised, interpreted and assessed in the light of the original activity or topic. This assessment may result in a return to earlier stages if the information does not meet the requirements of the task. Alternatively, extensive information may not be available to meet the original need. In this case, the topic could be redefined or extended.

What information have I got?

Have I checked this information against other sources?

What does it all add up to?

How do I present any conflicts or contradictions in the information?

Have I got what I wanted/needed?

Do I need more information about the aspects of the topic I am investigating?
Do I need information about additional aspects of the topic?

EXAMPLE: "My family" assignment.

7. Have I enough information? Who else can I ask?
   Does my parents' information agree with what my grandparents' told me?
   Can I check any of the information further?

8. How shall I present my information?

Presenting the information in a form appropriate for the intended audience is an important part of an information search. A well-planned presentation takes into account the nature of the audience and the nature of the information. The audience may consist of teachers, class, school council, local newspaper, etc.

In what form should I present my information? (If a choice is allowed.)
The information may be presented in such forms as:

essays,
projects report (possibly with audio-visual elements),
talk,
model,
booklet, etc.

In some cases, a debate of the pros and cons may be an appropriate structure: in others, an argument may be presented, a case made for one point of view.

Who is my audience?

How should I structure my presentation?

Do I need a conclusion?

EXAMPLE: "My family" assignment.

8. Shall I present my information:
   on a cassette tape?
   on a large sheet?
   as a family tree?
   with maps?
   in a booklet?

9. How have I done?

The students should be encouraged to reflect upon what has been done, how well it has been done, what has been learned and what skills and knowledge can be used another time. Also the teacher needs to assess the student's understanding and use of the guide and to isolate particular skills requiring further development.

Have I achieved my purpose/aim?

Have I solved the problem?

How have I done according to what teachers and fellow students think?

What have I learned about this topic?

Have any new issues/questions emerged?

What skills have I learned?

Of searching for information in general?
Relating to particular sources?
Particular techniques?

What could I improve? How?

EXAMPLE: "My family" assignment.

9. Do I now know the things I wanted to find out about my family?
   What other aspects might I try to find out about my family?
   What skills have I learned about interviewing?
   How can I improve?

STRATEGIES FOR TEACHING PARTICULAR SKILLS IN THE GUIDE

Extracting information from library materials—for early primary students

This example of how to teach students in early primary years to extract information from a variety of sources and to take notes is based on *Developing children's research and note-taking skills: a guide for teachers and teacher-librarians in primary schools*, 1981, pp. 8–11. It relates to sections 1–6 of the guide.

Note-taking is a difficult skill for primary school students to acquire and requires a carefully structured, developmental program throughout the primary school. This program should be a part of a whole school policy for the teaching of information skills.

A solid foundation of oral work at an early level is necessary. Students need daily practice in using "talk" to:

- frame questions;
- suggest possible answers;
- reflect on personal experiences relevant to the topic;
- sort out ideas;
- make generalisations;
- place ideas in sequence; and
- draw conclusions.

In the early years of school, most information gathering and processing will be oral with sorting and classification completed as group work. Listening is also a vital component of such learning experiences and a variety of audio stimuli should be provided. Information will be gathered during experiences such as excursions and other activities. Follow-up discussion of the information gathered should always be undertaken.

The information gathered may be recorded in experience books, wall-charts, murals, photographs, slides, or audio tapes. Placing events in sequence and grouping information according to defined characteristics should be gradually introduced. Experience books of photographs, with written commentary, can be used for sequencing and classification.

The development of vocabulary is essential. By Years 3 and 4 students should be confident in discussing a given subject, including developing lists of words which they can put into categories. Written reports should follow such discussion. The natural sequel to this approach is to encourage students to use suitable books to find additional information on subjects of interest.

The series of stages summarised below is one means by which students can be taught to gain information from books and other library materials. This process may extend over a year or more depending upon how well the students master the strategies. Follow-up activities will vary greatly according to the circumstances at the particular school.

Stage 1

Place a group of books on each table and encourage the students to browse through any that interest them. It is essential that the students are able to read the books without difficulty and that teachers examine the suitability of the books beforehand.

No written task is required of the students at this stage. However, the teacher-librarian and the teacher should question the students at random, encouraging them to "find out things" and to talk to each other and to the teacher about items of interest. Encourage the students to seek information from illustrations in the materials.

Stage 2

This stage introduces the idea of recording information.

While students are reading, raise the idea of "finding out" and discuss items of interest with them:

- "Tell us about weaving cloth."
- "Do you think that you can remember everything that you want to say?"
- "What is a way to make sure that you remember the things you want to remember?"

Introduce the idea of writing things down to help remember and of making sketches to help explain written notes. Both of the terms "notes" and "sketches" should be introduced together, because each helps students to gain information from the printed word and to communicate that information.

It is important to demonstrate note-taking to the students. Stress identifying important ideas and important details. Repeat the activities many times, in short, sharp sessions so that the students' interest is maintained.

Stage 3

Challenge the students to try techniques which "help them to remember". At this stage the emphasis is still on informality, so they can try any method they like which helps them to remember.

- Some will copy drawings from books.
- Some will copy sections from books.
- Others will try to recall details.
- A few may take notes.

Direct their efforts by challenging them with specific questions in much the same way as you might test their reading comprehension:

- "Where did the boy. . .?"
- "What kind of meal. . .?"
- "How long was. . .?"

Stage 4

This leads on from the previous stage and focuses on the value of note-taking and the need to make the notes useful.

Discuss the various methods of "remembering" used by the students, asking such questions as:

- "Is it any use just copying exactly what the book says?"
- "Would it be a good idea in this instance to draw instead of trying to use words?"
- "Is there anything special in that drawing?" "Why not point it out with an arrow and a label?"

At this stage, it is necessary to demonstrate to the students the value of useful note-taking—of taking notes which will accurately communicate key points. This can be done discussing any of the students' recent visits to the library to "find out" information about something of interest which occurred during the school day. Establish the fact that it would be helpful if they took notes about these things so that they could tell the rest of the class when they return from the library.

Stage 5

The technique of note-taking is taught at this stage.

Undertake some formal activities:

- "Find out something interesting from the book you have been reading."
- "Draw a picture."
- "Write one sentence about the picture."

After spending some time on this activity, introduce the following elements of note-taking:

(a) headings;

(b) sentences (in your own words);

(c) sketches with labels.

The techniques of teaching these elements vary. One method used is to discuss note-taking with a group or the class using some paragraphs on the overhead projector or the chalkboard.

Apply what the students have learned (the three elements) many times:

- "What is a good heading for this paragraph?"
- "Can you put information in your own words?"
- "Is there anything which can be shown better by using a labelled sketch?"

Stage 6

The consolidation of the technique taught now depends on the circumstances at each school. It is suggested that students use the note-taking technique to follow up personal interests in the library, and that the method be applied to curriculum topics in the classroom. Students should be encouraged to follow up interests originating at home, at school, or at the library.

Remember that students need daily practice in using "talk" to:

- frame questions;
- suggest possible answers;
- reflect on personal experiences relevant to the topic;
- sort out ideas;
- make generalisations;
- place ideas in sequence; and
- draw conclusions.

Ten Steps: for applying the guide at the postprimary level

The following exemplifies one way of applying sections 1–8 of the guide. It is based on *Ten Steps*, a student booklet developed at Broadmeadows and St Albans Technical Schools in the early 1980s.

Introduction

This unit of work is designed to help you with planning, researching and writing your assignments.

Remember that these ten steps can be used to help you with any assignment work.

Ten steps to writing an assignment

This is a summary of the steps you will follow. You will find more details after the summary.

1. Choose or be given a subject/topic to study.
2. Write your questions (or paragraph headings).
3. Find the resources.
4. Take notes from the resources.
5. Write the first copy.
6. Correct the first copy.
7. Find pictures, maps, drawings and diagrams.
8. Plan the layout (the setting out) of your finished work.
9. Prepare your final copy.
10. Complete your bibliography.

Step 1: choose or be given a topic or subject to study

Write your topic on the top of your page. A data chart is a good way of organising information you collect. Draw it up like this:

Step 2: write your questions (or paragraph headings)

These are the questions you will need to ask to find out more about your topic. The questions may be set by your teacher or chosen by yourself. When completing your assignment these questions will become your paragraph headings.

If your teacher has given you a list of questions, write one question in each of the boxes across the top of your chart.

If your teacher has not given you a list of questions you will need to decide on them yourself. It is important to make your questions very specific. One simple way of doing this is to ask yourself the following questions about the topic: How? Where? When? Why? What?

When you have finalised your own questions, have them checked by your teacher before writing them in across the top of your chart.

Step 3: find the resources

Resources can be books or encyclopedias, or non-book materials such as slides, film-strips, vertical file materials or people.

An encyclopedia is a good place to begin. Remember to check the index before using any encyclopedias or books to make sure that they contain the information you need.

Also use the subject catalogue. This willl lead you to other resources held by the library.

At the end of your assignment you will need to list all the resources you have used for researching the topic. This list is called a bibliography and is arranged alphabetically by author's surname (or title if there is no author).

As you use each resource, write down the author, title and page numbers in the left-hand column of your data chart.

Step 4: take notes from the resources

The best assignments are those written in your own words.

You will need to answer your questions by taking brief notes from the resources. Be sure to read through all the pages of information before you start to make notes. Your brief notes will later be written up in complete sentences in your own words.

The data chart is a good way of organising the information you collect from the resources. Along the top of the chart are written your questions. Down the side of the chart you write the names of the resources used.

This is what a completed chart would look like if you were researching the topic Elephants. (The crosses in the squares mean that the answer is the same as that collected from another resource.)

Paragraph headings / Source	Where do they live?	What do they eat?	What do they look like?
World Book Encyclopedia, Vol. 12, p. 324	Africa Burma. India.	Grass, leaves, small branches, bark.	Large, grey.
Spanter, J., *Elephants*, 1980, p. 10	X	Favourite food is the leaves at the top of the trees.	X
Animals of Africa, (Slides).	X	X	X

Step 5: write your first copy

You now have to write out all the information from the chart in good English and in complete sentences. The notes in your chart should be enough to write this copy without referring to the resources you have used.

Step 6: correct the first copy

Re-read what you have written. Does it make sense? Are there any spelling mistakes? Is the punctuation correct? Show your completed first copy to your teacher before going on to Step 7.

Step 7: find pictures, maps, drawings and diagrams

Your finished assignment will look more interesting if it includes labelled pictures. Maps, drawings and diagrams may be used to illustrate specific points about your assignment.

These may be hand drawn, collected from magazines you may have at home or you may wish to use photocopies which you can shade yourself.

Step 8: plan the layout of your finished work

Layout means the way in which your writing, pictures, maps, drawings and diagrams are positioned on your final copy. Your completed assignment may be in the form of a booklet, poster or other format agreed to by your teacher.

On some spare paper, draw a plan of where the headings, other writing, pictures, maps, etc. (and their labels) will be, and the size and shape of the space that each will occupy.

Step 9: prepare your final copy

In the format you have chosen, and according to the layout you have decided upon, begin your final copy. Follow your corrected first copy and layout plan carefully.

Step 10: complete your bibliography

A bibliography is an alphabetical list of resources used for your assignment. The resources notes in the left-hand column of your data chart will be your bibliography. Arrange them in alphabetical order by author's surname, or title if there is no author. Underline the titles:

e.g. *Animals of Africa*	Slides.
Spanter, J. *Elephants*	Page 10.
World Book Encyclopedia	Vol. 12, page 324.

Teaching report writing using data charts

The following, which relates to section 6 of the guide, is a summary of "Data charts: a crutch for helping pupils organise reports", by Gary R. McKenzie in *Language Arts*, Vol. 55, No. 7, October 1979.

Data charts provide an aid to teaching report writing in a highly structured manner by developing the skills of:

- abstracting relevant information from a source;
- organising the abstracts for easy comparison:
- comparing and synthesising discrete facts from different sources into coherent general statements;
- subordinating different kinds of elaborative or qualifying material.

Stage 1

The teacher demonstrates how to summarise or list information from the first source. Students then attempt to summarise using the second and third sources. Diagrams and photos can be used as non-prose sources.

Stage 2

The teacher demonstrates how to compare information down the first column to identify the main facts upon which all sources agree. A sentence which summarises the common answer is written in the summary space. Other facts, qualifications, examples or conflicting statements are developed into sentences which are added to the main (topic) sentence to clarify, expand or qualify it. The resulting paragraph answers the first question.

Students then attempt to summarise information down the second column to develop a paragraph which answers the second question.

Stage 3

When students can use the data process confidently, complexities can be introduced.

- Students could begin to construct their own data charts by deciding the questions they want answered.
- Students can begin to locate their own references.
- Sources which disagree with basic sources, and longer sources containing irrelevant information to be omitted, can be included in the data chart.
- Reports might also be developed by allowing students to work in groups.

Example of a data chart:

	What is an igloo?	How are igloos furnished?
Seasons of the Eskimo Bremmer, Fred		
An Eskimo Family Silver-Burdette Co.		
"Igloo" World Book Encyclopedia		
Summary		

Library Pathfinder: Assignments—Where do I begin?

Developed at St Albans Technical School, this pathfinder is a guide to using the print materials of the school library. It relates particularly to section 4 of the guide. In this example, students have been given an assignment on the government of any country of their choice.

You have been given an assignment but don't know where to begin.

What do I use?

Dictionary: especially if you don't understand the meanings of words used in the assignment. Don't forget subject dictionaries.

Encyclopedia: this will give you a broad outline of the topic. Try using the index also.

Subject catalogue: this will lead you to other resources in the library, both book and non-book.

What headings do I use?

Sometimes the question will give you the heading to use but often you may need to read the encyclopedia article so that you know more about the topic.

For this assignment, try some of the following headings for encyclopedias and the subject catalogue.

Start with the name of the country, with some sub-headings, for example:

AUSTRALIA—Politics and government
US—Government

You could also try using the name of a political system, especially in the index of the encyclopedia, for example:

COMMUNISM	DEMOCRACY
FASCISM	SOCIALISM

Sometimes the name of the country may give you the heading, for example:

SOUTH AMERICA
ARGENTINA

Once you have found the heading, find the book on the shelves and check the index and contents page for information you are seeking.

This process can be used for any topic and can be extended to non-book materials. It is appropriate for students who have moved to independent research.

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APPENDIX

Development of Information Skills— A six-stage sequence

There are many different ways that specific skills can be listed and sequenced. The following chart demonstrates that for many skills, students need to have opportunities to develop competence at a basic level before proceeding a more complex level. For example, unless students can first sort words into groups according to particular characteristics, they will be unable to analyse information to draw conclusions or consider alternatives.

This chart can be used to:

- assist teachers to sequence learning activities for particular ability levels.
- assist teachers to check that skills are comprehensively taught.
- assist in "placing" students in terms of their skill development.
- suggest strategies for introducing and practising specific skills.

This chart was adapted from the Traralgon Inspectorate's *Research Skills Chart*, published c. 1977.

Development of Information skills

	Stage 1	Stage 2	Stage 3
Following Instructions	Simple oral directions. Simple printed directions.	More detailed printed and oral directions. Written and oral directions for making/operating something.	Directions in maps, street directories. Directions in class assignments. Experiment instructions.
Formulating Questions	Literal questions—giving back information specifically stated in the information.	Inferential questions—supplying meaning not directly stated in the text. Asking questions to seek literal and factual information.	Asking questions to elicit inferential and interpretative information.
Locating Information	Gathering information from first-hand experiences, people and concrete objects.	Information gathering expands to include use of secondary sources (e.g., books—development of appropriate library locational skills).	Increasing variety of sources interrogated to locate information (people, places, books, audio-visual materials, computer data bases).
Extracting Information from Visual Sources	Extract literal information through picture discussion, in books, can associate text with pictures.	Simple interpretation of charts, TV, film through discussion. Uses simple atlases, maps, plans, charts, and can interpret same.	Increasing awareness of how TV and film images are created. Extension of atlases, maps and charts plus interpretation of graphs and labelled diagrams. More sophisticated use of map legends/keys.
Extracting Information from Aural Sources	Ability to identify and label particular aural sources.	Literal interpretation of fictional aural presentation.	Increasing recognition of fictional, narrative, dramatic, and factual presentations from aural sources.
Using Personal Experiences	Use of senses in gathering information from concrete objects.	Noting differences, similarities between objects, using these skills in a variety of known and unfamiliar situations.	Recalling past experiences that give meaning to present experiences.
Sequencing	Can keep events in proper order. Can follow sequence of events: What happened first? What happened next?	Can place events in sequence. Can place jumbled words into proper sentences. Able to reproduce a simple sequence of events.	Can arrange more events in proper sequence of, e.g., time. More complex examples of Stage 2, e.g., can organise jumbled sentences into a paragraph.
Classifying	Putting things into appropriate groups, e.g., colour.	Extend number of things and number of categories. In what way are things alike? Can pick the odd one out. Terms of oldest, youngest, etc.	Can classify items, e.g., choose headings and group given items in appropriate categories.
Key Words		Can identify key words in sentence (underline).	Can identify key words in paragraph.
Main Idea	Can identify main characters, key events.	Can find main idea in story.	Can find main idea in sentence or paragraph. Can put sentences in paragraphs in order.
Detailing/Verifying	Able to answer questions which identify specifics, e.g.: What colour is the phone box? Who is your teacher?	Able to describe people and events. Retell stories. Answer true or false to specific questions.	Can select information to answer a general question and find proof to support answers.
Skimming/Scanning	Able to pick out objects of importance in visual scenes, e.g., find mother at the school gate, select picture with dog from those without.	Able to pick out key words in print, e.g., select own name on list, identify headlines in newspaper.	Able to find place in a text quickly when teacher/child begins oral reading elsewhere on a page. Able to file letters or numbers in a sequence.
Summarising	Able to illustrate a story, outing or events, e.g., My visit to the zoo.	Able to retell a story or experiences orally in a few sentences.	Able to write a description of an experience or a retelling of a story with attention being given to a beginning/middle/end.
Considering Alternatives	Able to sort objects into groups with regard to such things as shape, colours and size.	Able to match up words and experience with their opposites, e.g., good/bad, cold/hot, happy/sad.	Able to see relationships and discuss cause and effect, e.g., The fire started because ...
Drawing Conclusions	Discuss people's actions, character traits, e.g., happy, sad. Drawing conclusions from what has gone before.	Drawing conclusions from an association of ideas.	Critical assessment of information for accuracy differentiating between fact and opinion. Detecting propaganda.
Predicting Outcomes	What is going to happen? Predicting next part of story being read.	Predicting outcomes from events that have gone before.	Telling why a particular outcome will result. Chain story—the end of one segment has to dovetail logically with the beginning of the next.

Stage 4	Stage 5	Stage 6	Comments
Experience in writing directions, e.g., operating directions, simple map making.			
Increasing sophistication in the sources interrogated to locate information.	Increasing ability to select the most appropriate information source for the task in hand.		
Increasing ability to draw inferences from above sources. Awareness of basic graphic communication signs, logos, cartoons.	Increasing awareness and sophistication of inferences of the part visuals play in advertising and "image" making referring to a wide range of media.	Increasing awareness and sophistication of inferences of the part visuals play in advertising and "image" making referring to a wide range of media.	
Relating aural presentation to accompanying visuals.	Can interpret imagery created via aural sources.		
Extracting facts from personal experiences.	Backing up conclusions from personal experience by checking findings against other sources, e.g., books.	Making value judgements about the world and ourselves from personal experiences, past and present.	
Ordering information into proper sequence, e.g., time, priority. Link work with summarising, note-taking. Can understand flow charts.	Collecting and organising information with sequence, using a variety of sources. Can understand time charts.		
More difficult classes and items. Can link classifying with note-taking, using data charts—what question does this information answer?	Can link classifying with outlining main headings, sub-headings, etc.		
Can identify topic sentence in paragraph. Can link key words with supporting details.	Can use key words as basis for outlining sub-headings. Can link key words with skimming, scanning.		
Understands structure of paragraphs. Can put paragraphs in order.			
Can compare information from different situations or sources to develop a topic, e.g., When we were at primary school we had the same teacher but at high school we have . . .	Able to identify the supporting and opposing points of an argument and check them against the external reality.	Able to support an argument or opinion by reference to a variety of sources and the selection and explanation of qualifying and modifying statements or opinions. Able to relate truths and external information to oneself and vice versa.	
Able to select passages or phrases to answer questions without careful reading of the whole.	Able to locate information on books through the use of table of contents, index, etc., and check if material answers need in terms of its presentation and content by glancing at the section. Able to recognise known material and quickly enter new fields of knowledge.	Able to read at different rates for different purposes. Good comprehension and retention of material at all reading speeds. Able to provide materials swiftly and select required information for closer attention.	
Able to select and identify the key points of a story or experience.	Can write a brief report after research using key words approach method: read passage; read again and note key main ideas; write report with close reference to key words and main ideas.	Able to prepare a concise and comprehensive report—written or oral—of an argument, indicating its strengths and weaknesses.	
Aware of consequences and able to predict outcomes, e.g., If I light this match and drop it on my book . . .	Able to present more than one solution to a problem, e.g., can write different endings to a story.	Able to consider a variety of solutions to a problem and decide which solution is the "best" in regard to the important factors of the case.	
Gathering information to support theory—deducing in light of this information.			

Teaching Information Skills

What are information skills and how do you go about teaching them?

The ability to find, process and communicate information is increasingly important in today's world. This publication is a guide to the teaching of information skills as an integral part of schooling.

Using methods outlined in this book, teachers and teacher-librarians can work cooperatively together to develop these skills.

This booklet is designed for teachers, although some of the contents can be used directly by students.

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